

NETWORK IDENTIFICATION OF PORTABLE ELECTRONIC DEVICES WHILE CHANGING POWER STATES

RELATED APPLICATIONS

[0001] The present application is a continuation of U.S. patent application Ser. No. 16/147,258 filed Sep. 28, 2018, the disclosure of which is hereby incorporated by reference in its entirety.

FIELD OF THE DISCLOSURE

[0002] The present disclosure is related to consumer goods and, more particularly, to methods, systems, products, features, services, and other elements directed to media playback or some aspect thereof.

BACKGROUND

[0003] Options for accessing and listening to digital audio in an out-loud setting were limited until in 2002, when SONOS, Inc. began development of a new type of playback system. Sonos then filed one of its first patent applications in 2003, entitled "Method for Synchronizing Audio Playback between Multiple Networked Devices," and began offering its first media playback systems for sale in 2005. The Sonos Wireless Home Sound System enables people to experience music from many sources via one or more networked playback devices. Through a software control application installed on a controller (e.g., smartphone, tablet, computer, voice input device), one can play what she wants in any room having a networked playback device. Media content (e.g., songs, podcasts, video sound) can be streamed to playback devices such that each room with a playback device can play back corresponding different media content. In addition, rooms can be grouped together for synchronous playback of the same media content, and/or the same media content can be heard in all rooms synchronously.

SUMMARY OF THE INVENTION

[0004] Systems and methods for maintaining knowledge of a network address (e.g., a MAC address) for a playback device while the playback device changes power states to a lower power or dormant state in which it is not sending its network address to other devices are disclosed. In one embodiment, a method for maintaining knowledge of the network identity of a network-connected playback device while changing power states includes determining that a playback device is entering a power state of sleep state, sending state information from the playback device to a central data repository over a network when the playback device responsive to the determination that the playback device is entering sleep state, where state information includes a MAC address of the playback device, receiving the state information about the playback device at a waking device from the central data repository, waking the playback device periodically at predetermined time intervals while in sleep state to listen for messages addressed to the MAC address of the playback device, and receiving a wake-up message at the playback device from the waking device and responding by changing from sleep state to active state.

[0005] A further embodiment includes maintaining a power state on a playback device, where the power state is in one power state of at least the states of: active, standby, and sleep, broadcasting a MAC address associated with the

playback device at a first predetermined time interval when the playback device is in the active power state, broadcasting the MAC address associated with the playback device at a second predetermined time interval when the playback device is in the standby power state, and ceasing broadcasting the MAC address when the playback device enters the sleep state.

[0006] Another embodiment includes reducing power to at least one electrical component of the playback device when the playback device transitions from the active power state to the standby power state, and increasing power to the at least one electrical component of the playback device when the playback device transitions from the standby power state to the active power state.

[0007] In a still further embodiment, the central data repository is a cloud network.

[0008] Still another embodiment includes sending a request for state information from the waking device to the cloud network, where the request for state information includes an identifier of the playback device.

[0009] In a yet further embodiment, the playback device is not connected to an external power source.

[0010] In yet another embodiment, state information includes status of whether the playback device is in a state that cannot receive or respond to a magic frame.

[0011] In a further embodiment again, the wake-up message is unicast addressed to the playback device.

[0012] In another embodiment again, the wake-up message is broadcast on a network that the playback device is connected to.

[0013] In a further additional embodiment, the controller device is another member of a group acting as group controller requesting MAC addresses of all devices in the group.

[0014] In another additional embodiment, the second predetermined time interval is longer than the first predetermined time interval.

[0015] In a still yet further embodiment, sending state information from the playback device to a cloud network when the playback device enters the sleep state includes sending state information from the playback device to a cloud network when the playback device enters the sleep state from standby state.

[0016] In still yet another embodiment, a method for changing power states of a network-connected playback device using a waking device includes requesting and receiving, by a waking device from a central data repository over a network, state information about at least one playback device, where the state information includes a MAC address associated with each at least one playback device and data indicating that each at least one playback device is in a sleep state, receiving input on a user interface on the waking device causing an instruction to cause the at least one playback device to come out of sleep state, responsive to the input on the user interface causing the instruction to cause the at least one playback device to come out of sleep state, sending a wake up message from the waking device with a magic frame to each MAC address associated with each at least one playback device.

[0017] In a still further embodiment again, the input on a user interface on the waking device causing an instruction to cause the at least one playback device to come out of sleep state includes detection of an input selecting the at least one playback device.